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Iowa State Agricultural College

THE AURORA.

"SCIENCE WITH PRACTICE."

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OUR STATE.

The South-land boasts its teeming cane,
The prairied West its heavy grain,
And sunset's radiant gates unfold
On rising marts and sands of gold!

Rough, bleak, and hard, our little State
Is scant of soil, of limits strait;
Her yellow sands are sands alone,
Her only mines are ice and stone!

From Autumn frost to April rain,
Too long her winter woods complain;
From budding flower to falling leaf,
Her summer time is all too brief.

Yet, on her rocks, and on her sands,
And wintry hills, the school-house stands,
And what her rugged soil denies,
The harvest of the mind supplies.

The riches of the commonwealth
Are free, strong minds, and hearts of health,
And more to her than gold or grain,
The cunning hand and cultured brain.

For well she keeps her ancient stock,
The stubborn strength of Pilgrim Rock;
And still maintains, with milder laws,
And clearer light, the Good Old Cause!

Nor heeds the sceptic's puny hands,
While near her school the church-spire stands;
Nor fears the blinded bigot's rule,
While near her church-spire stands the school.

—*Whittier.*

CLIOWISE.

BY PROF. W. H. WYNN.

IV.

The history of every age clusters round its representative men. If you want to read absorbingly the history of Greece, you will take Pericles for a centre, or Socrates, or Epaminondas, or Alexander the Great. The schools of philosophers, and artists, and poets, will each have their colossal figure towering above the rest, and Sophocles and Plato will almost embody a civilization in their names. See to it that you walk through the streets of Athens, where Phidias is lifting the frieze, or Socrates is holding his curious auditors by the magic of his talk, or some popular dramatist is filling the wide theatre with the echo of his praise.

If you would know the deep meaning that is conveyed in the word ROME, its jurisprudence, its eloquence, its philosophy, still permeating the subtlest life of the modern world, you must trace the Scipios in their valiant deeds, Cæsar in his daring, Cicero in his struggle with Catiline, or Marcus Aurelius brooding in philosophic calm over the turbulence of his times. In more than a figurative sense, Luther, Calvin, and John Knox embody the religious reformation of the sixteenth century; Rousseau and Merabeau are the French Revolution expressed in brains, and in blood; and Washington and Franklin, John Brown and Lincoln, gather up the virgin civilization of the new world in the immortal splendors that encircle their names. Napoleon was wont to call himself a child of destiny; and certainly he is one of a large class of men who stand for the strongest currents at their particular time sweeping through society, political, religious, literary and scientific, and like them his complete biography would be, so far, the history of his age.

But has not the theory of great men passed away? Carlyle and Emerson, each working under some high dream of philosophy, coming in upon the English speaking world from the transcendental vagaries of the German Professors, have done all that genius could do toward the apotheosis of the heroes of the race; but the age of iconoclasm is here, and these idols must come down from their pedestals, and mingle with the dust. What does science say? Has not the great poet of the scientists sung the change of sentiment in such words as we cannot forget,—

> "The individual withers, and the world is more and more."

And yet we cannot think that the "great man" will ever cease to be the leading instrument in the progress of events. First, there is more in human nature than the shallow philosophy of our time is able to grasp. Second, these extraordinary qualities may come together by some predestined confluence into the mighty individuality that is to fashion the age. Third, the order of things which has so uniformly prevailed in the past is not going suddenly to come to an end because Darwin has written, and Huxley has savored his materialism with the elegancies of speech.

Great men have been; great men will be; and it is through them primarily that we are able to decipher the meaning of an age. Prof. Seeley cannot forgive Macaulay for writing his history under the cognizance of this law. The hero he lauded grew large as he wrote, until at last the unwonted proportions were thrust into his eyes. How could he see with William of Orange obstructing his view? Macaulay was a mighty painter with the pen, and it is complained of him that he would put up his idol in the centre of his frame, and then crowd his canvas with such vivid pictures of favoring events, that the unwary reader was caught in his trap, and was no longer concerned for the accuracy of detail. But when are we to have the accuracy of detail? And who is the writer, having any conception of the proprieties of his task, that will be satisfied to bring to his readers a colorless narration of events.

The historian must *see*; see with the inner eye; see with a sympathetic and long-lingering gaze the heavings and palpitations of the great heart of humanity; and I know of no way of doing this, except through a vivid realization of the labors, and struggles, and martyrdoms of the conspicuous figures of the past. He must throw his mind back into the times he would describe. He must live there; he must suffer there; he must

take into his most intimate confidence the lofty, pure, heroic spirits of those times, doing as Macaulay did, asking them questions, and setting them to a sublime interlocution among themselves. "An historical romance," you say, "will be the result." No! not if an historian has the task in hand.

The historian wants the imagination of the romancer, but he wants something more. The atmosphere in which the romancer moves is fiction; it is the specific instrument through which all his literary ends are achieved. The historian is attended everywhere with a sense of reality, and would be very much pained and stricken down if he knew that the result of all his toil among musty rolls and decayed monuments was only some short-lived story or myth which he might tell for effect. It is a real human life that he would recover from the past; a real civilization he would depict; the exploits of real human beings that have lived before us in point of time, and still live in us in the aggregate of social progress they have bequeathed to our age. The imagination he will use as vigorously as any romancer or any poet, but simply as an instrument whereby the great reality may be reached; the reality, this time, not of broad general principles and universal impulses of human nature, such as the dramatist unfolds, but the actual, matter-of-fact struggles, and conflicts, defeats and triumphs, strength and weakness of the generations gone by.

SIR THOMAS MORE.

W. H. M'HENRY.

From time immemorial men of eminence and distinction have demanded and received from the common people a sort of reverence. It seems that men must have objects of ideal perfection as centers upon which their affections may rest, and thus it is that the popularity of one bad man can do more harm than the advice of a score of moralists can counteract. And since wonders and miraculous things are more attractive to the unthinking than common things, it generally happens that they take up some bad genius as a leader. This we suppose to be the reason why warriors have always won the laurels, while the advocates of peace and harmony have failed to be leaders. This blind and ignorant "hero-worship" is a great enemy to all free governments, for it is this that enables the military prodigies to

> "Wade through slaughter to a throne,
> And shut the gates of mercy on mankind."

We find in the character of Sir Thomas More, those elements which make him one of the guiding stars for all those who love law, liberty and free institutions. It would be better for the world and a blessing to the cause of liberty, if men would cease to tell the great deeds of Cæsar and Napoleon, and sing more loudly the praise of Sir Thomas More.

The ability of More is not surpassed by any of the geniuses of the battle-field. From his boyhood his piercing intellect and all-absorbing powers of mind, attracted the attention of all with whom he came in contact, and this is the reason why Cardinal Morton says of him, "This boy now waiting at table, will turn out a marvelous man."

At the premature age of 23 years his learning and mental powers were so great that he defiantly opposed and defeated the most favored measures of King Henry VII. The powers of mind manifested in his political romance " Utopia " place him on a level with that better class of politicians whose ideal is yet to be realized in that perfected republic which shall in all cases render the "greatest good to the greatest number."

As an author we cannot generally commend him, yet his English works were published by Queen Mary in 1557, and his Latin, ten years later at Basle. But Utopia is the only one which has not justly passed into oblivion; and it seems to us that it would have shared the same fate but for its valuable lessons in political policy. For the Utopia coming as it did from a fifteenth-century catholic, teaches both toleration and free government. As an author he is generally inferior, but as a jurist, and a legal advocate he is preeminent among all those who have attained the exalted station of Lord High Chancellor. In his position as chancellor he he also distinguished himself for remarkable perseverence, for in a very short time there was not a cause left undetermined. When we realize that More was the first man who

ever advocated the graduation of punishment to the offence, the fame of the ancient Grecian law-givers sinks into comparative insignificance. Why should the name of More be remembered and so carefully cherished? Not because he was a politician, not especially because he was a jurist, not wholly because of his writings; but because he is an excellent example of integrity in exalted positions of honor and trust, which should be an example to all the great officials of all nations.

No man ever followed more explicitly the dictates of conscience than More; nor the splendor of his situation, nor allurements of life could swerve him from the path of rectitude. In parliament he was the protector of the people against the oppression of the king, as chancellor he refused to consent to the lawless measures of Henry VIII. At this point in his tragic career, and because of these things he resigned the great seal. These acts of More rankled in the vindictive mind of the king. This he still farther influenced by refusing to attend the coronation of Anne Boleyn. So the king immediately began to plan his destruction. The first attempt was to implicate him with Elizabeth Barton, but this utterly failed. Now Henry's previous oppression of Luther is injurious to his political hopes, accordingly he has More indicted for having induced him to write books against Luther, but More escapes from this charge also. At length the oath of supremacy being required by parliament, More refused. He persisted in his conscientious position and would not yield to sophistry of Cranmer and hosts of others who beset him. He was accordingly sent to the Tower where for twelve long months he resisted all their attempts to induce him to take the oath. At the end of that time he was condemned for treason, and sentenced to be hanged and quartered. Henry arbitrarily changed this sentence and had him be-headed, but he also accompanied this command with the tyrannical mandate that they should not use many words at the block.

He was executed on the sixth of July 1575. More's actions on the scaffold enable us to say that he died as nobly as he had lived, which shows us that death comes not harshly, if life has been guided by the voice of conscience. Lord Byron says, "He exhibited a species of temperament too strong for the control of circumstances and which conceals a sense of misery without destroying it."

This closed the career of Sir Thomas More, at the age of fifty-one years. There is not another life and character of more disinterested integrity to be met with in all history, ancient or modern.

CULTURE OF WILL AND THE EMOTIONS.

C. D. T.

The present is an intellectual age, in which the growth of reason and storing of facts form the major part of our public education. The influence of the common school is perhaps the most potent factor in molding the character of our republic, both as a nation and as individuals. Does this culture, this molding power, furnish a symmetrical development of human character? Mind is myriad-sided in its nature, wrought with various feelings and impelled by a host of desires; though, underlying these, are a few primitive outlines that form the basis of mental development. We have three general faculties in the mental organism that require co-ordinate culture, *viz:* Reason, Emotion and Will. An education which omits culture in either of these divisions of neutrality, offers a faulty influence which will bear its fruits in the ill-matured minds of its formation. Our present systems of learning cultivate the reasoning powers to the detriment of emotion or will. The prevailing tendency is to suppress the higher feelings and neglect will-culture. The effort of many instructors is to denounce the emotional side of our nature as a weakness of mind, to be eliminated from man as a foolish phantom of ignorance. Many who rank as intellectual guides are thankful that the era of emotional excitement is past. Emotion is an essential quality of human character. It stirs the cold, unfeeling ideas of reason into action; creates a glow of enthusiasm in every effort and inspires all those

tender sympathies which bind the human family. When associated with ignorance, emotions, by their play on the imagination, may become injurious and for the time fairly intoxicate the mind, as often occurred in the religious camp-meetings of pioneer life. But our people have passed to the other extreme and the lack of this quality is now the source of more crime than any other agent. When man is cultured exclusively in the knowledge and use of facts, his intellect becomes cold and insensible to all regard of his fellows; he fully knows the situation of his comrades in life, but exercises no feeling in their behalf. Little sympathy is extended to the outside world; our social natures are growing formal and man is wrapt in the sole efforts of self-distinction.

The culture of will power has also been neglected, and man is greatly swayed by trifles—in short, "preponderance of motives" has a growing tendency in American people. It is a conceded idea, that our system of common school education is the most effective means of preventing crime and, though this is partially true, the structure of the system needs revision, if not reconstruction. The knowledge that an act is right or wrong, is of small moment in practice unless we feel the force of the idea. Our education should cultivate the higher sympathies of man—impress him with a delicate sensation of right and wrong as a foundation for a standard of virtue. When an idea is once felt, we require a directive power to put it into action. Both home and school government are greatly at fault in this. Too often, the child is held to as strict account for spilling a bottle of ink as for telling a falsehood. The will of "Young America" should not be set free, or tyrannized by arbitrary power, but led to practice self-control and self-direction. We should not subjugate the volitions to the power of right or fear of wrong: it makes the child a machine that develops into an ungoverned man. True culture will induce men to love justice and shun evil from their feeling of dislike.

There are few who commit crime at present from ignorance, for the knowledge of right has a clear conception with the masses, but it is a cold and barren thought deep and clear as an idea, though shallow and lifeless as an emotion. We need sympathy aroused to feel the value of right and the harm of vice. It is universally acknowledged that the heroes of every worthy achievement possessed a high degree of will-power. Volition can only begin in our feelings, and strong emotions mostly precede the effort of a dominant will; but neither reason, emotion, or will can singly mold true character. In the happy union of the three, we find the evolution of symmetrical men—heroes, who clearly show the truth by eminent reason; who feel the force and urgency of the moment through the tender sympathies, strung to delicate sensations; who when duty is known and felt possess volition to execute their convictions. Cæsar's lack of emotion made him cruel and proud, though conscience, a factor of his emotional nature, caused him to pause on the banks of the Rubicon. It was the power of emotion that tempted the many decisions of Abraham Lincoln with tender mercies, casting a halo of light, on that life we cherish in fondness.

The first intentions of the medium mind are for the most part worthy, but the lack of will allows many to drift into vice. Few of the contingent crimes of to-day are volitional efforts, for our criminals seldom will to be such. We should cultivate emotion and decision. Instruction in the laws of rectitude and duty are useless, till the emotions are made to feel their value and our wills can execute our convictions.

TRUTH.

P. G.

Since time immemorial Truth has been a vantage ground. There custom has waged a continuous war against individual freedom; there she has conquered and all down the centuries she has driven a retreating march of millions. They come, not as men and women, but shameless and unblushing slaves; the token of her victory, the symbol of her power. Slavery has been, all through the world's history, indicative of its progress. Even today, with all our boasted intelligence, there exists not one among us but whose every thought is his on another's

ıthority; whose mind is not warped and olded by prejudices and influences. We ıve made Truth a criterion of character, ıt not one of us can tell what truth is. 'hat custom designates as right and just, at we call Truth and respect it as such. ature has made us creatures of imitation. 'e are prone to believe, think and act in ıison with those around us. We are influ-ıced by social sympathies or antipathies, to ınsider that which those around us do as uth or falsehood, right or wrong, good or ıd. Nothing is virtuous or sinful, just or un-ıst, but that which custom has commanded ı be so. It is under these circumstances that ruth exists. A fabrication of the present, ı opinion of the hour, she finds earnest lvocates and disputants. "Right and ranny have had their epochs." We labor ı overturn an institution or to build it up, hichever way society has presented it to ı. History has brought to the surface, men ı whom we are pleased to accord the ımage of greatness. They are men who ave been martyrs to an opinion. Luther, Vashington and Lincoln are among the ighest on the roll of honor. They are men ho have apparently accomplished wonder-ıl reforms. But for centuries the opinions ır which they fought had been exerting ıeir influence by slow degrees. Little by ttle the germ had grown, until, as a ıighty power, it was placed in their hands. ustom made them; custom calls them reat. She teaches the Mohammedan, the atholic and the Protestant the creeds they elieve. She has made Truth whatever is elieved, whether it be the faith of the hristian or doubt of the Atheist. It is the ame influence that provokes the Hindoo ıother to cast her child into the Ganges as sacrifice to her God, that prompts the ımerican mother to guard, with infinite olicitude, the lives of her little ones. It ompels England to uphold her landed aris-ocracy, America to love her freedom; it ıas wrought war and peace, submission and eformation; it prompts the words that fall rom the lips of the clergyman. Politics, eligion, what you will, a word is sufficient ı arouse mankind to enthusiastic advocacy ır the bitter dispute of a Truth. Indeed the words of Byron carry with them convic-tion;—

"Truth's fountains may be clear; her streams are muddy,
And cut through such canals of contradiction
That she too oft must navigate o'er fiction."

Could we erase from our minds all preju-dices, then Truth might dwell there pure and undefiled. But this can never be. Nature has made us what we are. The future must be a repetition of the past. Its events must be the conflicts of new truths. With all these influences and prejudices of custom, shall one be responsible for the truths he believes? Shall we believe noth-ing? Bacon says "That implicit credulity is a mark of a feeble mind, will not be dis-puted, but it may not, perhaps, be as gener-ally acknowledged that the case is the same with unlimited skepticism." "He is the greatest philosopher who knows how to doubt well." Although it is necessary for the accomplishment of any great change that there should be men of one idea, still the most truly great are those who discount custom and cast away prejudices and seek earnestly and steadfastly for Truth. To be what custom designates great, one must necessarily lose his love of Truth. It is only on the ruin of character that fame can be builded. It is only after individuality has been destroyed that one posesses ambi-tion. Still, forth from the darkness of the the past there shines the lamp of progress and sounding through the misty vale of the future there seems to come the voice of prophecy saying: the new truths shall be purer than the old.

Works on a larger scale, for the manufac-ture of a new product, chlorozone, have been erected in Paris. It is a gas for bleaching purposes and is to take the place of chlorine.

Celluloid, a species of solidified collodion is so extensively used as a substitute for ivory that it is said to have seriously affected the business of ivory importers and workers.

A young man in the Smithsonian Institute has just made public the discovery of the method employed in making the stone and volcanic glass arrow heads, daggers, knives and axes of prehistoric races. It is by means of continued pressure with the point of a stick.

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THE AURORA, AMES, IOWA.

JUSTICE demands a word in regard to the unseasonableness, and appearance of the April issue of the AURORA. Its lateness is due to the general tardiness of the editorial corps in returning this spring, some being three weeks late; to a disappointment in a bill of paper ordered, and to the failure of the committee on advertisements to put in an appearance. As regards its appearance, we must candidly say, that a number of typographical errors are to be observed as well as a general poor appearance. Notwithstanding we believe the foreman in the printing office to be a competent man, yet most of these errors date back to the office. We have every reason to believe that many of the errors were due to the unprecedented carelessness of the printer boys, who failed to make corrections on the final proof reading sheets; a thing we believe the foreman should have looked after, whatever may be the policy of the office in such cases of carelessness, the policy of the AURORA will be radical if it is repeated. We do not wish to atone for what has been said, nor prop up the paper by saying, that to a foreman in a new office with inexperienced printers, and a press in a poor condition, the position is trying and embarassing at the least; but these are things for which the AURORA is not responsible; what it asks is a well printed paper, and we feel sure that our next issue will show a vast improvement at any rate.

ALL vocations of whatever kind are founded upon certain well-defined principles and are encompassed by well-marked boundaries, any important digression from which, tends to bring them into disrepute. Look, for a moment, at the field of journalism—the political, religious, scientific, etc., each has its department of labor, and the most influential and dignified of them are those which observe closely the land-marks which distinguish their domain.

We must with candor admit that there are, too often, cases of injudicious discrimination on the part of our college exchanges, which is truly surprising. Many, overflowing with political enthusiasm, make themselves particularly obnoxious to the college world by radical political harangues. The individual man, instead of his principles, must receive censure.

In many cases religious matters are handled in such a sectarian manner that we are almost compelled to exclude them from college journalism, and classify them as ardent supporters of religious dogmas. It seems to us that there is a cultured atmosphere surrounding our colleges and college interests that, if once reached by our editors in general, would be productive of less of that radical criticism among exchange editors. We would also hand the province of partisan politics over to its proper sphere. Religious matters would thus gravitate to their proper centres, and a general equilibrium, as far as college journalism is concerned, would thus be effected. We do not presume to arbitrarily map out a course by which all should be governed, because each college has its own peculiar environments, which affect their actions; but let a careful study of college interests be the ruling guide, and we can then look for purer and higher-toned journalism.

EXCHANGES! How and where shall we begin? Would we could invoke the aid of some muse to help assay the task.

We are not long in recognizing in the *University Reporter*, a very ably edited paper. They seem to take particular pride, however, in impaling the unlucky victim on the point of their pen and setting him up where, in agony, he can look down over their exchange column and see the error of his ways. We would just remind the *Reporter* of the title of an article in their December issue, "A devil in literature."

The modest appearance of the *Simpsonian* commends it. We were much interested in the analysis of Hamlet. One sentence is particularly striking: "the amazing tornado of passion over which presides throughout, a penetrating intellect, a discreet judgment and a resolute will, renders the play preeminently a tragedy of thought."

The *Cornell Graphic* says: "It is estimated that not one in ten, completing the course of an Agricultural school, ever follows agricultural pursuits afterward." In order that this matter may be a little further elucidated, will the *Graphic* answer these questions: Who made said estimates? What do you understand agricultural pursuits to mean? What does an agricultural course comprise? What is the law underlying these institutions?

An article in the *Wabash* starts off with: "We are going to rake from the ashes of oblivion a theme, common-hackneyed in the eyes of men; we raise our voice in a wail for the systematic, and scientific study of elocution." Just right Mr. *Wabash*, we would like for your wail to be loud and long enough to stir up our luke-warm Board of Trustees.

THE legislature, at its last session, elected two members to fill the expiring terms of office which occurred in the Board of Trustees. Mr. Geo. H. Wright, one of the outgoing members, was re-elected. The Hon. C. W. Tenney of Plymouth Co., was chosen to fill the vacancy, occasioned by the expired term of Mr. Buel Sherman. Both of these gentlemen have served in this capacity before—Mr. Tenney being on the Board in '71. We predict quite a surprise for this gentleman when he returns on his official duties andcompares the institution of '71 to that of '80.

ALL institutions must leave behind them a history; to this we must look for a knowledge of the policy and progress in the past. Hence we take pleasure in presenting to our friends a short, continued history of a few of the leading lines of policy and changes that have molded and carried the AURORA thus far and made it what it is. Its history is not long, but has been somewhat eventful. Early in the College history it became evident that there was a strong desire for a college paper, the growing enthusiasm could be suppressed no longer. Hence we find that early in the year '73 the societies met and consummated a plan whereby the college would take one more step in its rapid advancement toward the front as a first-class institution. On this eventful occasion the AURORA began to shed its first infant rays over the distant horizon. The hearts thus made glad, experienced a full realization of their cherished hopes in the June number which was the first issue. We must confess that it was some-what crude in its appearance, but it presented all the healthy signs of vitality necessary to enable the most inaccurate prophet to predict a long and eventful life.

We see, too, the further wisdom of their carefully laid plans in choosing so able an editor-in-chief as our worthy Professor M. Stalker, also in enlisting the hearty co-operation of General Geddes, who has the honor of being the author of the name, AURORA.

I cannot refrain from giving the name of the first corps of editors in full; M. Stalker, Emma Childs, W. O. Robinson, C. A. Corning, C. H. Lee, Kate Tupper, Sallie Stalker, Hattie Raybourne, names which are familiar to the students to this day.

(to be continued.)

WE wish to call the attention of the students to our advertising columns. Make it your duty to call on those first who patronize us. We wish to make this especially emphatic to the younger classes, because the AURORA will soon be handed down to them, and the paper cannot be successfully maintained unless it is financially sound. To the business men of Ames we look for much support, and from us they rightfully expect patronage,

SCIENTIFIC.

BRIEFLETS.

The feasibility of Edison's electric light is still under discussion.

J. W. Lockyer has discovered a new method of spectrum observation.

Trichina spiralis has been recently discovered in a hippopotamus at the Zoological Garden of the city of Marseilles.

Information has reached Marseilles of a successful journey to the source of the Niger, which has been made by two men from Siena Leone.

The attempt at manufacturing diamonds artificially has been recently proved, by an eminent chemist, to be both a chemical and financial failure.

Mr. J. F. Bottomly describes, in *Nature*, a successful and novel experiment, which has been arranged, for constructing a model glacier with shoemaker's wax.

THE WAVE THEORY OF SOUND.

W. W.

In the AURORA for August, 1879, appeared an article bearing the above title, written in opposition to one of the best established of physical theories—the wave theory of sound. Examination will show that the article in question consists mainly of a very clear and succinct statement of some of the principal arguments adduced by "Wilford" in his book entitled "Evolution of Sound." This is a very ingeniously-written book, and one that might meet with considerable favor among those not well acquainted with the science of Acoustics. It produces many points that are difficult to explain, but that is no evidence that they cannot be explained to the entire satisfaction of any intelligent man. That the author is not really a scientific man, is shown plainly by his experiment on the amount of heat developed by the compression of air, described on page 144 of "Evolution of Sound." He takes a glass tube, having a sectional area of one square inch; places a small thermometer at the bottom, and compresses the air in the tube to one-half its original volume. The thermometer indicates a rise of two and one-half degrees Centigrade. He *guesses* that one-half the heat is lost by radiation, or that the air is actually heated through five degrees, and his experiment is complete. He makes no attempt at an accurate determination of the heat lost by radiation or the amount required to heat his thermometer, much less noting any of the other sources of error.

The fact is, if his thermometer weighed one ounce, it would require more heat to raise its temperature through 1° than to raise the temperature of the tube-full of air through 45°, supposing the tube to be 2 feet long. What would he thought of a physicist who based an important conclusion on such an experiment asthis, and then ridiculed a theory that has received the support of the whole scientific world for 2500 years?

If a body, situated in any elastic substance make, with great rapidity, a number of vibrations of very small amplitude, what will be its effect on that substance? Let its first motion be forward, it will evidently drive before it, and compress, a portion of the substance. As soon as it is slightly compressed, the first layer of particles, in virtue of their elasticity, will compress the next layer, and so on. Since the substance is elastic, the first layer must be slightly compressed before it will begin to move the succeeding layer, the amount increasing with the weight of the layer and diminishing as its elasticity increases. Therefore, while the velocity of transmission of any such disturbance, through a perfectly rigid substance is infinite, its velocity through an elastic substance will increase as the density increases and as the elasticity decreases. When the vibrating body moves backward, the result is a rarefaction of the adjacent particles of the elastic substance, which, in turn, act upon the next layer of particles, producing exactly analogous results with the case above cited, and subject to the same laws of variation with density and elasticity. Lack of space forbids an investigation of the laws of this variation, but it will be easily seen that the result is a series of alternate condensations and rarefactions of

each layer of the elastic substance, or, in other words, a series of waves, transmitted through that substance with a finite velocity. Waves, so produced and propagated, are, by scientific men, termed sound-waves, and they claim that all the phenomena of sound are due to them.

I think that a careful, candid examination of the best works on sound, will show that the analogy between sound-waves and water-waves is not considered complete by the best physicists, but is merely mentioned in popular writings in order to avoid making the matter too abstract for popular comprehension. There is this important difference between them; in water-waves the particles of water move *at right angles* to the line of propagation of the disturbance; while in sound-waves, the particles of the substance move *in* that line. If this fact be borne in mind, many of the difficulties suggested by Wilford will disappear. Another principle, the ignorance of which is a fruitful source of error in Wilford's book, is the principle of work. Thus, the work of raising 100 lbs. 100 feet, is exactly equalto the work of raising 10,000 lbs. 1 foot, and any force that is able to do the former work is able also to perform the latter. In his problem of the cubic foot of lead dropped into a cubical tank 1,000 feet square, full of water, it matters not, whether we consider that the lead has raised 1 cu. ft. of water from the bottom to the top of the tank, 1,000 feet; that it has raised the whole column of water above it, 1,000 cubic feet, through a height of one foot, or that it has raised all the water in the tank, 1,000,000,000 cubic feet, through a height of .000,001 foot, the amount of work done is the same, and the amount of force required to do it is the same. The amount of work done by a force is equal to the product of the space passed over, multiplied by the resistance overcome.

This principle furnishes also what seems to be a strong objection to Wilford's corpuscular theory of sound. His corpuscles must be destitute of weight or else a sonorous body like a bell must soon become sensibly lighter. But when one tuning-fork vibrates and thus causes another one in unison with it, and at a considerable distance from it, to vibrate, it performs the work of bending a bar of steel. If it be admitted that waves of air are propagated a distance of three or four feet, with sufficient force to bend that bar of steel, it must be admitted, that it will have an effect upon the delicate membranes of the ear, to cause them to vibrate. But if this be not admitted, then the only communication between them is by corpuscles, which, being destitute of weight, must move with an infinite velocity; which cannot be, since he says their velocity is only about 1,100 feet per second. In the case of vibratory motion, the principle of work may need a little explanation. If a body is compressed, work is performed upon it; if it expands, it performs work; in other words there is an alternate storing and restoring of energy, and but a small part of the aggregate work done is due to external forces, nearly all being done by the action and reaction of the particles of the body itself.

MINUTE MEASUREMENTS IN SCIENCE.

W. G. M.

None of the physical sciences can make great advancement so long as there are no means ot making accurate measurements of time, space, weight, etc. Says Davy: "The native intellectual powers of men in different times are not so much the cause of the different successes of their labors as are the peculiar natures of the means and artificial resources in their posession." As an illustration of this, we have sciences which seem to owe their rise to the invention of a single measuring instrument. The epochs which many men have created in different departments of science are due more to their ingenuity, exhibited in the construction of some means of accurate measurement, than to any particular ability, as is sometimes supposed. The science of heat might be taken as an example of a science arising from the invention of a single measuring instrument—the thermometer. Electricity cannot be said to have existed as a science for nearly two centuries after Gilbert made his first experiments in that direction, but the introduction of Coulomb's tortion balance gave a

means for systemizing the knowledge of electrical phenomena, by giving a method of measuring and comparing them. A technical description of the various methods and apparatus that have been used to arrive at accurate physical results would be out of place in an article like this, and we can mention only a few of the most important, together with the results obtained, and a comparison of some of these results with the deductions of a few of the early investigators in the same directions.

That physical property which seems to allow of most minute and accurate measurement, is time; and the most valuable instrument in the hands of the physicist for measurements in this direction, as well as in many others, is the pendulum. Understand us to say, that, although the pendulum is the most valuable instrument for obtaining measurements of time, where accuracy is required, we do not affirm that it gives immediate indications of such small periods of time, as is obtained by some other means, such, for example, as the tuning-fork and revolving mirror. The value of the pendulum as an instrument for physical investigation, arises from the fact that it allows of almost an endless repetition of the same action, the principle of repetition being that from which is finally derived the most accurate measurements of science,—for example, the ratio of the mean solar to the sidereal day, (1.00273791 to 1), has been obtained by an application of this principle. A result of which Jevons, in his Principles of Science, says, it is " probably the most accurate result of measurement in the whole range of science."

However, leaving the pendulum, in this connection, we would mention the tuning-fork as an instrument which has of late years become of almost as much importance to the physicist as a chronometer, as it is to the musician as a standard. In skillful hands the tuning-fork may be made to measure periods of time as small as the one twenty-thousandth part of a second. Small as this seems it is yet a large quantity as compared with that obtained by the revolving mirror. To Wheatstone is accredited the honor of introducing this method of indicating small periods of time, and it is known that he determined, by this means, the velocity of electricity, in a particular case, to be, as mentioned in Ganot's Physics, about 288,000 miles per second; and obtained a measurement of a period of time something less than the 1-1,150,000 part of a second. An American physicist by an extension of the same principle has succeeded in indicating a period of time about the 1-100,000,000 part of a second—"A period of time so short," says Mayer, "that a ray of light traveling at the rate of 185,000 miles per second, would have time to pass over only ten feet of space."

Next to time, the property of weight seems to admit of most exact determination. Balances have been made which allowed of the determination of the 1-1,000,000 part, and it has been thought possible without great difficulty to construct them capable of measuring accurately to the 1-5,000,000 part. Dr. Ure mentions a balance capable of indicating an addition to the load as small as the 1-7,000,000 part. This may not, however, be a determinate measurement. We might remark that the principle of measurements by means of the balance is the same to-day as when "Abraham weighed to Ephron the silver," for the cave of Machpelah. All the improvement that exist in the balance of to-day over the old balance is that it is a better piece of workmanship.

Standing third in the series of physical properties to which minute measurements are applicable, is space; and while almost perfection has been reached here we must remember that the measurement of lines or distances is probably more difficult than almost any other measurement that can be made. The trigonometrical survey, probably illustrates to a better advantage than anything else, work of this character, and we would refer those who want to look up the subject to a study of the methods employed in measuring base lines for the coast surveys. So far as we have been able to find, the average error in the United States coast survey for base lines has been one inch for about six and two-thirds miles, this however has been greatly reduced in some cases and an error not greater than one inch in sixty-six and two-thirds miles is found recorded in the report for 1873.

One more example, which involves another principle often used in making accurate measurements,—the principle of multiplying small quantities until they become capable of easy measurement by ordinary means. Very small quantities of radiant heat, such, for example, as that from the fixed stars, are now always measured by means of electricity, using Melloni's thermo-electric-multiplier. By this means Melloni succeeded in measuring a difference of temperature of 1-5,000 of a degree, Cent., and Joule has later obtained a measure of about the 1-10,000 of a degree.

The advancement of the science of to-day exists principally in the fact that a sure footing is found in these fundamental principles. It is said that Eratosthenes, 250 years B. C., calculated the dimensions of the earth from the then known data, and came within about one-sixth of the true result; or he obtained the diameter to within about 1,300 miles. Three of the leading astronomers of the present century have independently calculated the same and have obtained results which agree to within a range of six hundred feet.

Astronomers now make measurements from 300,000 to 400,000 times as accurate as the astronomers of two thousand years ago. But it is needless for us to mention such results; our work-shops, laboratories, observatories and even our homes furnish too many examples to call for any illustrations here. We know there are many properties of matter to which only the rudest and most primitive measurements are yet applied; but their investigation will only come the sooner and be the more certain as the other and more common properties submit to accurate measurement.

EDISON'S ELECTRIC LAMP.

M. C.

The two problems before the inventor were: 1, to make a durable lamp; 2, to effect a subdivision of the light—general illumination being much more agreeable than that from a single light.

The lamp proper consists of a small bulb of glass, in which a high vacuum is produced before sealing; with two platinum wires sealed into it and connected by a slender, horse-shoe-shaped piece of charred cardboard attached to the wires by means of small platinum clamps. In the high vacuum the paper loop burns brightly, but is never consumed. Outside the bulb the platinum wires are soldered to copper ones.

Each house is furnished with a meter which measures a certain proportion of the electricity received by it, and furnishes, also, a means for cutting out the house, should the supply of electricity accidentally become too great. Space will not permit a full description here. It is proposed to make a standard lamp, by means of which the gas-equivalent of the electricity may be estimated, and the bills will be made out in thousand feet.

The generator, named Faradic, in honor of the great physicist, depends upon this fact: if wires be passed in front of a magnet, cutting the lines of magnetic force, electricity will be thrown into the wire. The machine consists of an immense magnet and armature and an arrangement for carrying away electricity. The armature is a cylinder which may be rapidly revolved by an engine-belt. The cylinder consists of a spool of wood wound with iron wire. Outside are loops of copper wire passing to the end of the cylinder opposite the belt. As this cylinder revolves in front of the magnet, electricity is generated in the loops of wire and carried off to the main wire through brushes of copper wire which touch the cylinder.

Now as to arrangement. It is proposed to have large central stations, containing great groups of these generators. They are each to be run by four groups of engines, 250 horse-power to a group. Motion is changed to electricity in the cylinder above described, electricity passes from the group of generators through a main wire. The wires from the stations are to be laid in bundles under the pavement, the size of each wire being proportioned to the amount of electricity required by its district. They are divided again and again, until we have one conductor to every three lamps, which may be burning at the same time. After passing through the carbon loop the electricity is taken up by a collecting-wire and returned to the station. The lamp is brought into the circuit by turning a small handle.

The light is simple, cheap and avoids necessity for matches and danger of fire.

An excellent description of the lamp and system of lighting may be found in Francis R. Upton's paper in *Scribner* for February.

LOCALS

—Have you had the measles?

—The senior cry for psychologies has subsided.

—A would-be student wishes to pick his course in the Sub-freshman class.

—Professor Thomson and family expect to take their meals in the building.

—The trigonometry class contains two ladies; an increase of one over last year.

—Why is Sam. McGavern like a threshing machine? Because the faster he goes the louder he hollers.

—The Sophomore zoologists will make collections of bugs, insects, fish and *snakes*,—ugh!! Just think of it.

—One of the boys accounts for the string he found in the beef, by saying they forgot to take the halter off before butchering.

—One of the microscopes has been so badly injured by some of "those histologists" that it cannot be repaired this side of New York.

—A certain Freshman has discovered one advantage in the faculty; he says they write to his parents so often it saves him the trouble.

—"Matthew Parker being a very conservative man just like Queen Elizabeth," is the way a Junior begun his recitation in English Literature.

—When anything of interest happens on the college farm, please inform "Ye Local Editor" of the fact. Office hours from 7 a. m. to 10 p. m.

—The College pulpit has been occupied by strangers nearly every Sabbath of this term. We did not learn the names of all, but among them was Rev. Mr. Effinger of Des Moines.

—There is a rumor to the effect that the domestic economy class will attend the state fair in a body this fall. We suppose that, like all rumors, about 1 per cent is to be credited.

—During recreation hour the "posts" are actively engaged playing ball, tossing and running after balls they never catch.

—The Senior class went on a flying geological trip the other day, if one can judge from the rapid manner in which the Professor led off in a foot race with one of the Senior gentlemen.

—The Sophomores are throwing in the class meetings thick and fast; they keep others in profound ignorance as to whether they are deliberating on mock programmes or the cut of moustaches.

—We judge that our students have not been told that they may be presidents some day; none of them seem interested in their own or anybody's else nomination. Politics are at a very low ebb.

—In a recent speech Mr. Girard remarked that "when mere intellectual infants could squeeze into a sort of scrub class called the Sub-freshman class, it was and always would be a curse to the institution."

—Those sick with the measles seem to be doing as well as could be expected under the circumstances. Quite a number have recovered so as to attend classes. One or two have gone home to recuperate.

—The Seniors have "passed" their fifteen lectures on the brain, and are now much engaged in Psychology. At one recitation twelve zeros were made in succession. We challenge the Freshmen to beat it.

—At a late recitation in mineralogy, the Professor had occasion to speak of the remarkable properties of blue glass; upon which a venerable Senior inquired; "What *is* the *blue grass* theory, Professor?"

—The entertainment given by the Arabella Root concert troupe was one of the treats of the season. The music was excellent in every respect; the execution of the violinist being particularly appreciated.

—One of the Senior ladies was heard to remark that she felt like Betsey Bobbits. Suppose it was because her sentiments ran thusly:

"Methinks 'twere sweet to be a ghost,
To hang about a certain *Post*."

—*Senior, to Professor of Military Tactics:* "The Senior class is now ready for cavalry practice."

Professor: Yes, Sir, but we can't provide the necessary number of *mules* at present.—(Exit Senior.)

—If you wish to know anything concerning the increase of a pneumatic trough of H_2SO_4 when exposed to moist air, consult Mr. Wm. Wheeler, who has had the matter under consideration and is now able to give practical results.

—The state has given us an appropriation to be used for buildings much needed by the institution. Two neat cottages for those who wish to board themselves, together with a botanical and entomological Laboratory will soon grace our grounds.

—A common question among society members on Sunday morning is: "How many did you 'take in' last night?" We would say for the benefit of new students that this is to be understood in its literal sense and not figuratively as it is sometimes used.

—The President was no doubt forcibly reminded of his school days, when, on knocking at one of the fifth-story rooms, he was put through that severe catechism which boys insist upon before admitting visitors; with such questions as, "Who's there?" "Give us your pedigree."

—The Senior who made out the programme for dissertations, appreciated our love for them so fully that he arranged them for saturdays and sundays as well as the rest of the week, to extend the term through. One gentleman, who is on for Saturday night, thinks of taking a special subject.

—The Juniors are progressing finely with their microscopic work. They no longer make sections fifteen hundred times too thick but are now proficient in preparing "perfectly magnificent specimens." It is probable that they will make wonderful discoveries, perhaps among them, that the epidermis is not composed of parenchymatous tissue formed of reticulately anastomosing cells filled with granular protoplasm surrounded by a hyaline portion.

—Of course it was a Sub-freshman (?) who came so very near making an audible sound with his feet during a chapel prayer not long since; we wouldn't for a moment suspect anyone else of such a lack of propriety, but it does seem queer that the echo should appear to come from the front seats.

—A certain p. g., becoming very much excited in debate, expressed a wish to become a Brooks and make a Sumner of his opponent. The coolness with which the Proctor bid him choose his arena and come on with his cane, brought the house down with laughter and secured for him the decision of the judges.

—A new study has been added to our course or rather insists upon introducing itself. It is compulsory upon no particular class but any member of any class in any course who has not "passed" it is liable to be classified therein at any time. No excuse given for absences, because whether present or not, those taking it are marked. It is very desirable that the grade should be high, a simple three is not a safe pass mark; it lays you liable to taking it the second time. Should our readers wish to know more concerning it, inquire of any student who has passed or is at present classified in the *measles.*

—Not long since general permission was given the students to attend the graduating exercises of class '80 of the Ames High School. Quite a large number availed themselves of the privilege and, together with the many Ames people, completely filled the new opera hall. The programme consisted of written productions, music, and an address by the principal, Mr. Girard, a graduate of the college, class '76. We judge from the interest manifested by teacher and pupils that much care has been taken to raise the grade of the schools. In his address, Mr. Girard pointed out some obstacles in the way of complete success both in school and practical life, and suggested some means by which the patrons might assist in further improvements. The exercises were very creditable to all concerned, and made an interesting and instructive entertainment.

—The evening of March 27th being the tenth anniversary of Professor and Mrs. Thomson's marriage, a few of their friends surprised them with a tin wedding celebration. It being necessary to dispose of Professor in the early part of the evening, while some of the culinary processes were going on, he was induced to rush frantically over to the college building under the false impression that a steam pipe was in danger of bursting. He spent some time with a mathematical formula, trying to convince the proper authorities that an accident of that kind was impossible. In the mean time the company was assembling, and, soon after, the blushing bride was again led to the altar, General Geddes performed the impressive ceremony. From the nature of the metal necessarily incident to the occasion, there was more of the useful than the ornamental. All enjoyed a merry evening and bade the amiable host and hostess good night with many kind wishes for the continuation of their wedded happiness.

CLIPPINGS.

Of all sad words of lad or lass the saddest are these, "you did not pass."—*Ex.*

An Ohio newspaper speaks of a man being bruised "by an emphatic gesture of a mule."

An editor out west who had served four days as jury-man, said, "I am so full of law that it is with difficulty I refrain from cheating somebody."

A little girl read a composition before the minister. The subject was "A Cow." "The cow is the most useful animal in the world except religion."

He returned to the University late again as usual. His excuse to the vice president was that familiar one, that his grandmother had died. The V. P. put on his glasses, looked over his records and informed the gentleman that he had had two grandmothers die already. Then the student stammered and said he had mis-spoken himself; it was his mother-in-law who had left this vale of tears. The V. P. was satisfied, offered his congratulations and the student went his way.

SOCIETY NOTES.

—"The Bachelors are in debt." "The Crescents are too aristocratic and kid-gloved." "The Philos are not select enough." "The Clios are selfish." These are the objections put before the minds of new students by society "log-rollers;" each of them is of about as much importance as the others. All the societies are good and in any of them more benefit can be obtained than can possibly be obtained outside. Our advice would be, by all means join one of the societies.

—The Bachelors have thus far been very successful in securing new members. At one session they admitted fourteen and the week after five joined their ranks. The large majority of gentlemen students keeps them in a flourishing condition.

—The Clios' third meeting was an open session for the new ladies; the programme consisted of a critique, poem, paper, oration, story and essays. Among the latter was one by each of the post-graduate members.

—The Crescents are left without a president by the absence of Mr. McKim. The vice-president, Miss Devoss, has ably filled the chair thus far. Mr. Reed has been chosen as director of the AURORA in Mr. Barnes' place.

COLLEGE NOTES.

$300 has been raised at the Michigan University, to be used in defense of students on an alleged false imprisonment by the city authorities.

Edison will next turn his attention to the invention of an electric pancake machine for the young ladies of Vassar.

The salaries of the Harvard Professors are to be raised from $4,000 to $4,500.

Western College is to be moved from its present situation, to a place having better railway communications; there is talk of locating it at Clarence, Cedar Co.

There are sixty-four college secret societies in this country having 487 living chapters, and a membership of 65,256. These societies have 64 chapter houses. The most expensive one cost $10,000.—*Ex.*

PERSONAL.

'78. Richard Burke is principal of the Delhi schools.

'76. Mr. Girard will spend a portion of his vacation in Des Moines.

'82. Launched on the sea of matrimony, during the month of March, Miss Lyda Henderson and ——-.

'82. Miss Frater after spending one term at Rockford Female Seminary, again greets us with her smiling countenance. Ames is the best place after all; isn't it, Miss Abbie?

'73,—'81. Professor Lee is running a fruit farm near Des Moines; his sister Dell renders him valuable service by practicing her domestic economy lessons in his kitchen.

'79. Mr. Hyde put in an unexpected appearance the other day. He was on his way home from Illinois, where he has been teaching; he expressed himself as being glad to get a taste of college hash once more.

'79. Miss Minnie Cleaver will not return as we stated in the last issue; but, instead, has purchased a fine microscope with other appliances for studying Histology, and will devote herself to that work this summer.

'80. Miss Dora Sayles, whose devotion to class '80 has always been so marked, has been obliged to sever her connection with it on account of ill health. She will probably return next year to graduate with '81.

'80. Mr. McKim could conquer completely Analytics or Calculus; but when the measles attacked him he was put to rout and compelled to flee home for refuge. His friends hope soon to see him in his old place with his enemy conquered.

'77. E. L. King, lectured before the public schools of Osceola, Nebraska, not long since on the "Brain and Nervous System." The *Osceola News*, in commenting on it, gives Mr. King credit for a full understanding of his subject but fears the effect of the tinge of evolution on young minds.

Dr. Hutchins, formerly connected with the college, paid it a flying visit Thursday last.

Professor Hagen of Harvard describes some experiments, and comes to the following conclusions: 1st. That the common housefly is often killed by a fungus and that in epizootics a large number of insects which live in the same locality are killed by the same fungus. 2. That the fungus of house-fly works as well as yeast for brewing purposes. 3. That the application of yeast on insects produce in them a fungus which becomes fatal to the insect. 4. That, in experiments, all potato beetles sprinkled with dilute yeast, died soon after and that the fungus was found in the vessels of the wings. *Science Gossip.*

BOOK NOTICES.

Dodd & Mead, Philadelphia, have published the "Morals of Shakespeare," a very suggestive little work, prepared by Arthur Gilman. It consists of such extracts from Shakspeare's plays as bear upon the whole list of virtues of which human nature is capable. Mr. Gilman has thrown these passages in with other short extracts from noted ancient writers entitled to sit in the same symposium with the "divine William" notably Sophocles in metrical English renderings, and the bible. The whole makes a rare volume of the sublimest utterances on the sublimest themes.

Prof. Wynn has for some years back been discussing some of the great problems, that lie on the confines of philosophy, literature, and theology in "written pamphlets studiously devised." These pamphlets he distributes gratuitously, and has had calls for them from all quarters of the country. The last one is a review of a learned theological work, just now attracting a wide notice among all denominations, for the liberal view it takes of the central doctrine of the christian religion. The title of the pamphlet is "The Principle of the Reformation," and is a statement of that great Protestant idea that turned the whole tide of modern history, and gave general outline to christendom as it now is. It should be closely read by those who are just now interested in the history of the sixteenth century.

ALUMNI.

We will try and give Alumni matters special mention from time to time, and in order that our notices may be perfectly accurate, we solicit short contributions of all Alumni matters bearing upon facts from the Alumni. This being the first year that such a thing has been attempted to any extent, we would like an expression on the part of the Alumni, as to its feasibility, practicability, etc. The Alumni association is beginning to assume such proportions, and the enthusiasm of many of its members, will warrant, it seems, this new departure and a hope that it may be successfully maintained.

'77. T. F. Lee when last heard from was teaching school near Des Moines.

'73.—C. B. Maben is doing a somewhat extensive Real Estate business at Garner.

'77. C. B. Martin is one of the popular teachers of Scott county, near Davenport. Any further knowledge can be obtained by writing to Eldridge.

'76. You can be enlightened on any point of law by addressing J. F. Hardin, Eldora, where, we understand he is doing a good business in his profession.

'75. Yes we have heard of the whereabouts of Miss Celestia A. Neal *alias* Mrs. ——, again. She has settled down to the sweets of this life, by taking a very wealthy grocerman in as partner.

'74.—C. S. Chase, after three years successful work as principal of the public schools in Shenandoah, Page Co., has turned his attention to other subjects and is now practicing law in the same place.

'77.—Fabian Stratton reports himself happy in the possession of a farm well tilled, about two miles southwest of Alden. He finds pleasure and profit in applying the practical knowledge gained at the I. A. C.

'78.—Mr. Richard Burke, at present, is principal of the public schools at Delta. He has accepted a position as clerk in the Auditor's office at Sigourney, and will enter upon the discharge of his new duties about the first of May.

'77.—Miss Florence Brown's many friends, will be glad to learn that she is shaping the destiny of the Wheatland schools as principal. We learn that she is a very popular instructor, and has worked up a kind of a monopoly of the school.

'72.—F. L. Harvey, professor of natural sciences at Fayetteville Ark., has been placed on the "ragged edge," by the sudden departure of his wife for her Iowa home. She has promised to make her visit short however.

'75.—Miss Ida Sherman is at present enjoying health, and a fair share of happiness, at her home in Fredericksburg, Chickasaw Co. She expects to spend the coming summer in one of the departments of the New Hampton High School.

'72—'74. Dr. Irvin Smith and wife are now located at Charles City. The Doctor will make that his home hereafter, having entered into a partnership with his father, in the practice of medicine. The firm has a large practice, being one of the best in northern Iowa.

'79.—You can have all the intricate problems of banking readily solved by writing to A. L. Hanson, cashier of bank at Belmond. We are pleased to see A. L., so soon after his graduation, secure a position which cannot prove otherwise than a solid foundation to a lucrative and pleasant life.

'72.—J. C. Arthur, whom his classmates remember as a great lover of botany, has been heard from. After a post-graduate course at the I. A. C., a short visit at Cambridge, and a course of lectures at John Hopkins University, he at last appears at the University of Wisconsin, as professor of Botany—salary, $1,000 per annum. We extend our congratulations, not only to Mr. Arthur, but to the University as well.

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